



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2015-4023; Directorate Identifier 2015-NE-29-AD; Amendment 39-18445; AD 2016-06-14]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for all General Electric Company (GE) CF6-80E1 turbofan engines with rotating compressor discharge pressure (CDP) seal, part number (P/N) 1669M73P02, installed. This AD was prompted by reports from the manufacturer of cracks in the teeth of two rotating CDP seals found during engine shop visits. This AD requires stripping of the coating, inspecting, and recoating the teeth of the affected rotating CDP seals. We are issuing this AD to prevent cracking of the CDP seal teeth, uncontained part release, damage to the engine, and damage to the airplane.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: For service information identified in this final rule, contact General Electric Company, GE Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215; phone: 513-552-3272; email: aviation.fleetsupport@ge.com. You may view this service

information at the FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-4023.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-4023; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Herman Mak, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7147; fax: 781-238-7199; email: herman.mak@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all GE CF6-80E1 turbofan engines with rotating CDP seal, P/N 1669M73P02, installed. The NPRM published in the Federal Register on November 17, 2015 (80 FR 71747). The NPRM was prompted by reports of cracks in the teeth of two rotating CDP seals found during engine shop visits. The NPRM proposed to require stripping of the coating, inspecting, and recoating the teeth of the affected rotating

CDP seals. We are issuing this AD to prevent cracking of the CDP seal teeth, uncontained part release, damage to the engine, and damage to the airplane.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the NPRM (80 FR 71747, November 17, 2015) (“the NPRM”) and the FAA’s response to each comment.

Request to Clarify Definition

Qantas, Air France, KLM Royal Dutch Airlines (KLM), and GE Aviation requested that the shop visit definition be clarified to allow for randomly occurring exemptions. Including exemptions would not increase the time between full shop visits.

We agree. We changed the shop visit definition to include specific conditions that do not qualify as shop visits.

Request to Clarify the Shop Visit Definition

KLM and Air France requested we clarify the phrase “separation of pairs of major mating engine flanges”.

We agree. We changed the definition for engine shop visit.

Request to Change Compliance Time

Qantas requested a more restrictive compliance time for engines that experience blade-out events and a less restrictive compliance time of next part exposure for all other affected engines. Only engines that experience blade-out conditions require urgent compliance times.

We disagree. The compliance times in the NPRM were derived from analysis that includes the risks associated with engines with and without blade-out events. We did not change this AD.

Request to Clarify Compliance

Qantas requested that we clarify the specific type of stationary CDP seal repair and that we clarify what is considered a replaced stationary CDP seal.

We agree. We modified the Compliance section to specify the repair as ‘honeycomb’. We also added a definition to define a replaced CDP seal.

Request to Change Applicability

KLM requested that the applicability be expanded to include spare parts.

We partially agree. We agree with the concern for accidental installation of borazon-nickel coated rotating CDP seals because the NPRM does not preclude this scenario. We disagree with expanding this AD to include spare parts because ADs address unsafe conditions of engines, not spare parts. We changed this AD by adding an installation prohibition paragraph to address this concern.

Request to Change Credit for Previous Action

KLM requested the Credit for Previous Action paragraph allow for other approved original equipment manufacturer approved procedures for stripping and recoating rotating CDP seal teeth. KLM recoated two CDP seals using a procedure approved by GE.

We disagree. It is unknown whether previous recoating procedures are equivalent to the procedures specified in the Credit for Previous Action paragraph of this AD. Any party may submit a request for an Alternative Method of Compliance using the procedures listed in this AD. We did not change this AD.

Additional Changes

We clarified paragraphs (e)(2)(i) and (e)(2)(ii) of this AD.

We updated the cost estimate. We changed the Costs of Compliance paragraph of this AD by increasing the number of affected engines by four and updating the costs accordingly.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD with the changes described previously.

We also determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

Related Service Information under 1 CFR part 51

We reviewed GE Service Bulletin (SB) CF6-80E1 S/B 72-0529, Revision 01, dated August 21, 2015. The SB describes procedures for stripping, inspecting, and replacing the seal tooth coating on the affected rotating CDP seals. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Other Related Service Information

We reviewed GE CF6-80E1 (GEK99376) Engine Manual, Revision 42, dated March 15, 2014. The engine manual describes acceptable repair procedures for the seal teeth.

Costs of Compliance

We estimate that this AD will affect 10 engines installed on airplanes of U.S. registry. We also estimate that it will take about 7.15 hours per engine to comply with this AD. The average labor rate is \$85 per hour. Parts would cost about \$7,835 per engine. Based on these figures, we estimate the total cost of this AD to U.S. operators to be \$84,428.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator.

Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2016-06-14 **General Electric Company**: Amendment 39-18445; Docket No. FAA-2015-4023; Directorate Identifier 2015-NE-29-AD.

(a) Effective Date

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all General Electric Company (GE) CF6-80E1 turbofan engines with rotating compressor discharge pressure (CDP) seals, part number (P/N) 1669M73P02, installed.

(d) Unsafe Condition

This AD was prompted by reports from the manufacturer of cracks in the teeth of two rotating CDP seals found during engine shop visits. We are issuing this AD to prevent cracking of the CDP seal teeth, which can lead to uncontained part release, damage to the engine, and damage to the airplane.

(e) Compliance

(1) Comply with this AD within the compliance times specified, unless already done.

(2) Strip coating, inspect, and recoat the teeth of the rotating CDP seal, P/N 1669M73P02. Use paragraph 3.C.(2) of GE Service Bulletin (SB) CF6-80E1 S/B 72-0529, Revision 01, dated August 21, 2015 to do the strip coating, inspecting, and recoating, as follows:

(i) For engines that have had stationary CDP seal, P/N 1347M28G02, replaced or stationary CDP seal honeycomb repaired; strip coating, inspect, and recoat the teeth of the rotating CDP seal at the next engine shop visit.

(ii) For engines that have not had stationary CDP seal, P/N 1347M28G02, replaced or stationary CDP seal honeycomb repaired; strip coating, inspect, and recoat the teeth of the rotating CDP seal at the next part exposure of the rotating CDP seal.

(f) Installation Prohibition

After the effective date of this AD, do not install any rotating CDP seal, P/N 1669M73P02, that has not had its seal teeth recoated using procedures specified in ESM 72-31-10, REPAIR 002 of GE CF6-80E1 (GEK99376) Engine Manual, Revision 42, dated March 15, 2014, into any engine.

(g) Definitions

(1) For the purpose of this AD, exposure of the rotating CDP seal is defined as removal of the compressor rear frame from the high-pressure compressor (HPC) module.

(2) For the purpose of this AD, an engine shop visit is defined as the induction of an engine into the shop for maintenance involving the separation of any major mating engine flanges, except that the separation of engine flanges solely for the following purposes is not considered a shop visit:

(i) Transportation without subsequent engine maintenance.

- (ii) Removing the turbine rear frame (TRF) for repair of TRF cracking.
- (iii) Removing the top or bottom HPC case, or both, for HPC airfoil maintenance.
- (iv) Removing only the accessory gearbox and/or transfer gearbox.
- (v) Replacing the high-pressure turbine (HPT) stage 1 blades per CF6-80E1 SB 72-0504 "Quick-Turn Workscope Procedure to Replace CF6-80E1 Stage 1 HPT Blades".

(3) For the purpose of this AD, a stationary CDP seal is replaced if at any previous shop visit, the seal has been removed and a different seal is installed.

(h) Credit for Previous Action

You may take credit for the actions that are required by paragraph (e) of this AD if the actions were performed before the effective date of this AD using the procedures in ESM 72-31-10, REPAIR 002 of the GE CF6-80E1 (GEK99376) Engine Manual, Revision 42, dated March 15, 2014, or earlier versions.

(i) Alternative Methods of Compliance (AMOCs)

The Manager, Engine Certification Office, FAA, may approve AMOCs to this AD. Use the procedures found in 14 CFR 39.19 to make your request. You may email your request to: ANE-AD-AMOC@faa.gov.

(j) Related Information

(1) For more information about this AD, contact Herman Mak, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7147; fax: 781-238-7199; email: herman.mak@faa.gov.

(k) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) General Electric Company Service Bulletin CF6-80E1 S/B 72-0529, Revision 01, dated August 21, 2015.

(ii) Reserved.

(3) For GE service information identified in this AD, contact General Electric Company, GE Aviation, Room 285, 1 Neumann Way, Cincinnati, OH 45215; phone: 513-552-3272; email: aviation.fleetsupport@ge.com.

(4) You may view this service information at FAA, Engine & Propeller Directorate, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(5) You may view this service information at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on March 16, 2016.

Ann C. Mollica,
Acting Manager, Engine & Propeller Directorate,
Aircraft Certification Service.

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